

STATE OF DELAWARE
SINGLE POINT OF CONTACT – SPOC
INTERGOVERNMENTAL REVIEW OF FEDERAL PROGRAMS
Office of Management and Budget
Haslet Building, 3rd Floor, Dover, Delaware 19901
(302) 739-4206

NOV 09 2009

Copy to
Mike Hojnicky 11/9/09

1. STATE APPLICATION IDENTIFIER:

S9-10-27-01

SPOC use ONLY

Month

Reviewer

CC's

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2. Applicant Project Title: Cyber Connectivity (RIIC2) *ARRA*

3. Applicant Department: Delaware Technical & Community College

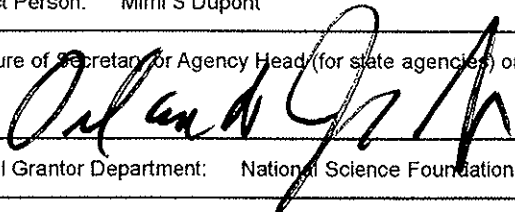
4. Applicant Division/APU: Jack F. Owens Campus

5. Applicant Address: PO Box 610, Georgetown, DE 19947

6. Contact Person: Mimi S Dupont

7. Contact Person's Phone Number: 302 855 5923

8. Signature of Secretary for Agency Head (for state agencies) or Chief Administrator (for all other applicants)



Dr. Orlando J. George, Jr., President

9. Federal Grantor Department: National Science Foundation

10. Federal Sub-Agency:

11. Federal Contact Person: Majia M. Kukla

12. Phone Number: (703) 292-4940

13. Address: 4201 Wilson Blvd. Arlington, VA 22230

14. Federal Program Title:

EPSCoR Research Infrastructure Improvement Program: Inter-Campus and Intra-Campus Cyber Connectivity (RIIC2)

15. FEDERAL CATALOG NO:
(CFDA)

47

082 *N*

16. Project Description:

Awards made under this program will provide up to \$1 million for up to 2 years to support the enhancement of inter-campus and intra-campus cyber connectivity within an EPSCoR jurisdiction. These awards are intended to enhance broadband access for academic research and the utilization of cyber infrastructure consistent with the jurisdiction's Science and Technology (S&T) plan. The inter-campus and intra-campus connectivity targeted by these awards is expected to broaden individual and institutional participation in STEM research and education activities within and among jurisdictions and to facilitate synergy among NSF EPSCoR Research Infrastructure Improvement activities.

17. Will funds be utilized for any technology initiatives? ☒ Yes ☐ No If so, Business Case Number and brief project summary:

Project will be completed entirely as sub-grantee of University of Delaware with NSF EPSCoR funds.

18. Measurable Objectives:

a. What were last year's objectives?

N/A

b. Were these objectives met? (If not, please explain why)

N/A

c. What are this year's objectives?

To upgrade Owens Campus cyber infrastructure

(If more space is needed, please attach a separate sheet of paper)

11/9/09

19. Grant Period: From: June 1, 2010 To: May 30, 2012	20. How many years has this project been funded: N/A	21. If the project was funded last year, how much federal money was awarded? N/A		
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22. Source of funding for this application:	Dollars
a. Federal grant	200,000
b. Other federal funds (Specify source of funding)	
c. Required state contribution (Specify source of funding)	
d. Discretionary state contribution (Specify source of funding)	
e. Required local contribution (Specify source of funding)	
f. Other non- federal funds (Specify source of funding)	
TOTAL	200,000

23. Budget by cost category and source:	Federal Funds	State Funds	Other Funds	Total Funds
Salaries & Fringe Benefits				
Personal or Contractual Services				
Travel				
Supplies & Materials				
Capital Expenditures	200,000			200,000
Audit Fees				
Indirect Costs				
Other				
TOTAL	200,000			200,000

24. How many positions are required for the project? (Exclude casual/seasonal employees)			
Breakdown of position(s)	Authorized in State Budget	New Positions Required	Total
Paid for out of federal funds			
Paid for out of General Funds			
Paid for out of state special funds			
Paid for out of bond/local/other funds			
TOTAL	0	0	0

25. PLEASE NOTE: On a separate piece of paper, please give position number, grade, yearly salary and percent of funding (federal, state, local, other) and the full-time equivalent for all positions required. Please identify the new positions by placing an asterisk before the position title. If this grant funds positions within other departments, divisions and/or offices, please list them. If a position has been reallocated to or from another grant please indicate the grant source.

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We received your document and responded to your request to cover the four areas. Here are our responses and some edits to your remarks.
Budget Note: No indirect costs will be used.

DTCC Scope

DTCC will improve the internal campus network infrastructure for the Owens Campus to ensure that data from the targeted areas (Science and Engineering) is sent through new, reliable and "intelligent" managed switches within an improved operating environment.

DTCC Expected Results

This improvement will reduce the amount of collisions and congestion on the data path that the targeted areas (science and engineering) share with all other services and departments. In order to improve this switched network, some network cabling will be replaced and expanded to better serve the targeted areas. Environmental and power improvements in the campus network infrastructure and server rooms will also be required to improve the reliability and move toward a more stable operating environment for the targeted area's network traffic.

Four Areas We Were Asked to Address:

Steve provided the following paragraph, please see our edits:

1. Overview of DTCC role in education and workforce training in DE.

General concept: DTCC with 40,000+ students across four campuses that span the State plays a key role in educating students in 21st century workforce skills, retraining workers in advanced technology areas and in broadening participation of underrepresented populations in higher education (DTCC students are ~27% minorities; ~ 61% (Is 61% in STEM accurate?; was this in previous STEM grant) are pursuing education in STEM related fields, and a growing number plan (~39%) to continue education beyond their current level). DTCC educates the state's health care workforce in nursing and sixteen allied health careers and is providing leadership to the State in educating students and re-training the current workforce in the skills needed for "green economy" initiatives including energy auditing and conservation, efficiency and management, and renewable energy technologies.

Addressing Number 1 Mimi Provided the Following:

OVERVIEW

As a statewide, multi-campus technical and community college, Delaware Technical & Community College provides open admission, post-secondary education at the associate degree level. DTCC's comprehensive educational opportunities support economic development and respond to community needs. Programs include career, general, developmental, and transfer education; workforce training; professional development; and lifelong learning. The College's effectiveness is reflected in its 62 national program accreditations, 92 transfer agreements with senior institutions, 98% graduate employment rate, 89% national licensure exam pass rate, and its national recognition for excellence

including the 2009 Council on Higher Education, Student Learning Outcomes Assessment Award.

DTCC is Delaware's leading education and training provider at the sub-baccalaureate level. The College develops curricula, provides associate degree programs and short term training to support worker training and employer needs, and is the state's largest Individual Training Account (ITA) training provider for the Delaware Department of Labor.

This cyber infrastructure upgrade will enhance the Owens Campus's ability to implement education and workforce training, especially in evolving energy fields such as conservation, efficiency and renewable energy technologies.

Energy House: We will be building an Energy House. It will have a distance learning classroom and mobile camera to move about the house to share learning experiences with other campuses and partners. In addition, it will allow us to view other learning activities being presented any where in the world.

Energy House Description:

The critical need to protect the environment and reduce energy costs is now generally accepted. Developing, producing, installing and maintaining new energy-related technology – and the massive job of retrofitting existing buildings and systems – will create jobs and increasing demand for educated workers. Energy House is a model visionary partnership of education, business, and government with major benefit to Delaware and its citizens.

Energy House will be a learning center for alternative and renewable technologies, focusing on renewable energy products usable now in homes and workplaces, such as a living green roof, solar systems, wind generation equipment, radiant floor heating, geothermal options, and efficiency in construction and appliance usage. The facility will help educate consumers about sustainable design and renewable energy options, allowing students and the public to see and touch renewable energy in action.

As a demonstration facility showcasing residential applications through its residential design, Energy House will collect and provide data on the costs and benefits of various forms of energy generation so students and the public can evaluate options and make decisions. The House is planned with see-through, glass-wall galleries showing the technologies in operation, which will allow demonstration of installation, operation and maintenance best practices. The use of multiple systems in one house will provide valuable comparison data for learning and applied research.

On the ground floor, the facility will house two classrooms and a conference room where students in energy degree and certificate programs will learn. The second floor is designed as a large green technologies lab. Energy House will enable the workforce for sustainable energy jobs to learn the competencies needed to install, operate and manage these technologies in a state-of-the-art, hands-on learning environment. Comprehensive college offerings also will include non-credit workshops, conferences and company

specific training. Delaware Tech regularly will provide opportunities for the public to see and understand the practical applications of renewable energy technologies, leading to wider public acceptance and use.

Energy House will have distance learning capability to make concepts and their application through technologies accessible to students on site and around the state, the nation and the world.

In addition to the new programs described in Question 4, the College is partnering in several STEM-related projects that, if awarded, we will benefit from this upgrade:

1. DTCC recently partnered with Delaware State University on DSU's proposal to NASA's Minority University Research and Education Program for a Curriculum Improvement Partnership Award for the Integration of Research into the Undergraduate Curriculum (CIPAIR) grant. If funded, the College will participate in the NASA CIPAIR project in several ways. The Engineering Technology Department (ETD) and Environmental Training Center (ETC) are planning several program enhancements.

First, the ETD will develop a 48-hour (three-credit) GIS course covering use and application of Arcview software. The course will be part of the associate degree Surveying and Geomatics program, implemented in fall 2009, to expand the curriculum's GIS content. DTCC's Owens Campus has 12 seats of Arcview installed, but software use has not yet been incorporated in the curriculum, and GIS applications are currently covered only as a component of one existing course. More fully integrating GIS into the program will better prepare DTCC graduates for immediate employment as technicians and for transfer to a senior institution.

Second, DTCC ETD faculty will develop two- to four-week internship opportunities for DTCC Engineering Technology faculty allowing them to work with DSU and/or Wallops Island researchers on remote sensing and GIS applications. Interacting with researchers will greatly enhance the faculty's awareness of career opportunities in remote sensing and GIS. This in turn will assist them in planning curriculum changes to better prepare DTCC graduates for transfer to a four-year institution, and to become effective new employees of NASA or its commercial and academic partners. The experience will also enable DTCC faculty to more effectively recruit new students into the Surveying and Geomatics program and to advise existing DTCC students about employment and transfer opportunities.

Third, summer internship positions at DSU and/or Wallops Island will be provided for two or three rising DTCC second year students from the Surveying and Geomatics program. Being an engineering technology program, the Surveying and Geomatics students will acquire strong CAD and surveying skills and have sufficient technical abilities to be productive interns after completion of

their first year coursework. Providing these internship opportunities will enable the students to experience research work and encourage them continue on for a bachelor's degree upon completing their associate degree program.

Fourth, DTCC and DSU faculty will develop a web based career awareness quiz for STEM, in particular engineering technology. The design, format, and content will be based heavily on input from current students and recent graduates. DTCC's four campus locations are increasing recruiting efforts for engineering technology programs. National organizations contacted indicated the need for a more applications-based and software-intensive nature of engineering technology careers does not currently exist. Having such a visual, web based quiz would be a strong recruiting tool and would have national applications.

2. DTCC collaborated with UD; the National Institute for Certification in the Engineering Technologies (NICET), a not-for-profit division of the National Society of Professional Engineers (NSPE); and Florence-Darlington Technical College (FDTC)/South Carolina Advanced Technology Education Center (SC ATE) to develop and test nationally normed exams for evaluation and improvement of program outcomes for 2-yr Engineering Technology programs and a corresponding industry-recognized career path certification for engineering technicians. The exams will be used for program outcomes assessment for accreditation of 2-yr ET programs.
3. DTCC has partnered with the Delaware Department of Labor, Department of Natural Resources and Environmental Control, Delaware Economic Development Office and other groups in a State Energy Sector Partnership grant proposal to train Delawareans for energy sector employment. A key component of this strategy is education – for the green workforce of Delaware's future, for the employers providing green jobs and for the public at large.

Based on focus groups, industry analysis and labor statistics, the SESP has identified over 51,440 jobs in Delaware in industries directly related to the energy sector and trends show that these sectors will retain these positions and add an additional 6,578 positions over the three-year course of this grant. To retain and grow these positions, training and critical skills are necessary to implement energy efficiency and conservation technologies, renewable energy, and building products.

SESP expects to serve a total 1,727 Delaware residents through training, while placing a total of 355 trainees into employment. This funding opportunity will help seed Delaware as an energy and green jobs leader and help transform an economy that relied on the automotive industry to one that uses green technology as its new industry driver.

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2. The cyber upgrades impact a broad group of students and educators at DTCC-Owens, both internal to the campus and externally beyond the campus.

Bob Messner provided the following information for item 2:

The cyber upgrades will impact a broad group of students and educators at DTCC's Owens Campus, both internal to the campus and beyond the campus. These upgrades will affect education capability in a broad sense by:

- ♦ Expanding the local area network communications to 1000 megabits/sec;
- ♦ Improving local area network reliability by monitoring its operating environment;
- ♦ Improving local area network equipment life by conditioning its power feed;
- ♦ Expanding the main campus router to support (2) 10,000 megabit/sec connections; and
- ♦ Improving campus infrastructure room security by adding video cams.

Historically, the Owens Campus local area network was designed to support a client-server model that housed data applications which were unaffected by small delays in communications. The problem with this type of design is that "real-time" applications are becoming widely popular and they require instantaneous communications for the "real-time" applications to function properly. Applications like instant messaging, streaming video, streaming audio, and videoconferencing are examples of real-time applications used throughout the College community.

Owens Campus's local area network is far more complex in design than typical local area networks, with more potential sources of failure or degradation, and a wide variety of traffic types competing for scarce resources. This equipment is housed throughout the campus in "infrastructure rooms" also known as "wiring closets." Reconfiguring existing wiring-closet switches capable of delivering resilient services at the edge of the network will not only help the network work better now, but will prepare the campus for the fast-approaching future of communications. By improving the campus network infrastructure and infrastructure rooms, benefits will be realized by the entire campus community.

3. How does this upgrade impact the EPSCoR specific biotechnology education programs at DTCC-Owens?

Barbara Wiggins provided the following for item 3:

The increased bandwidth will allow the students in the Biotechnology and Introduction to Research classes at both Owens and Stanton campuses to collaborate and share resources easily. The upgrade will also enable real time communication as well as acquisition and transfer of data files.

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4. How does this upgrade enhance the ability to drive education and workforce training in the emerging energy related fields (conservation, efficiency and new technologies).

Stephanie Smith and Mimi provided this information for item 4 that was prepared for the Energy Grant:

Fully aligned with the Governor's 2009-2014 energy plan for the state and State Energy Sector Partnership (SESP) vision and mission, DTCC has begun implementation of comprehensive statewide energy management and renewable energy education and training offerings that will prepare participants to enter immediate employment and for additional postsecondary credentials. The College's offerings will significantly contribute to the state's efforts to make Delaware a sustainable economy and create climate prosperity.

The College's new applied energy education and training programs respond to the state's proven need for energy management professionals and technicians who will maximize energy efficiency, increase utilization of renewable energy systems, decrease negative environmental impact, and reduce energy costs.

These educational offerings reflect national research on energy services careers and curriculum recommendations from the College's statewide Energy Advisory Committee. The offerings will complement the University of Delaware's energy research and policy analysis, which sets the stage for the next step – education and training to apply solar, wind, geothermal and other renewable energy technologies in an expanded market.

In discussions with College curriculum specialists, Debra Rowe, president of the U.S. Partnership for Education for Sustainable Development, endorsed Delaware Tech's conscientious efforts to create high quality educational offerings and the actions the State of Delaware is taking to increase the use of renewable energy technology.

The programs will replicate the success the College has demonstrated in collaborating with business, industry, professional organizations, and government to design and implement programs that prepare graduates with the competencies to meet employers' needs. The program will build on the existing resources of the nationally accredited HVAC-R, automotive, and engineering technologies which include architectural, electrical, electronics, mechanical, and general engineering. New programs such as the energy management associate degree will provide students with knowledge and skills in new and emerging green occupations.

Integrated credit and short-term non-credit programs will be offered to meet an array of education and training needs both for incumbent workers and those seeking employment. On-campus demonstration labs of renewable technologies will provide hands-on training and living examples of green building operation.

To encourage economic growth and prepare students, incumbent workers and job seekers for the green jobs market without over anticipating it, the College will collaborate with

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investors, business and industry, professional organizations, government and education to expand use of renewable energy, generate profit, strengthen business, and grow both green jobs and green talent. As part of SESP, the College is promoting policy, incentives and regulations to "green" existing jobs and grow new jobs.

Offerings planned in the applied energy education and training program include:

- ♦ Associate degrees in energy management and renewable energy technologies;
- ♦ Certifications in renewable energy technologies (solar, wind, geothermal), energy management, energy assessment and cost analysis, green building design and construction, hybrid and electric transportation; and
- ♦ Workshops on energy efficiency and conservation, renewable energy options, and a variety of energy topics for technicians, facility managers, residential energy users, and specialized industries such as poultry and cold storage.

With an audience of students and businesses projected to be across the state and throughout the region, all of these educational offerings depend on reliable and fast access to web based resources for scenario based learning and simulations as well as online delivery of lecture, power point presentations, and discussion. Wait time and interrupted connections squander learning opportunities and discourage student engagement. This grant will ensure the renewable energy demonstration systems in Energy House, the on-line resources instructors want to embed in each course's Blackboard site, and the synchronous delivery of content via Wimba will work efficiently and spur student interest, along with faculty commitment, to increase real world learning applications in science and technology programs including energy.

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EPScoR Grant Work by DIET

Scope:

DTCC will improve the internal campus network infrastructure for the Owens campus to ensure that data from the targeted areas (science and engineering) are switched through new reliable intelligent managed switches within an improved operating environment.

Expected Results:

This improvement will reduce the amount of collisions and congestion on the data path that the targeted areas (science and engineering) share with all other services and departments. In order to improve this switched network, some network cabling will need to be replaced and/or expanded to better serve the targeted areas. Environmental and power improvements in the campus network infrastructure and server rooms will also be required to improve the reliability and move toward a more stable operating environment for the targeted area's network traffic.

Funding Required:

Items Required	Qty	Unit price	Extended price
Equipment cabinet / rack (enclosed, secure, lockable)	15	1,000.00	15,000.00
Surge suppressors, rack-mounted	30	100.00	3,000.00
Cabinet exhaust fan	15	200.00	3,000.00
Com closet room exhaust fans	3	1,800.00	5,400.00
Environmental monitoring	18	400.00	7,200.00
Electrical circuit upgrades	10	300.00	3,000.00
Illumination upgrades	5	300.00	1,500.00
Security cam equipment	18	900.00	16,200.00
Optical fiber junction box	10	500.00	5,000.00
Various wire management components			8,200.00
Data switch upgrade	48	1,400.00	67,200.00
Optical fiber interface modules	24	200.00	4,800.00
Optical fiber jumpers			600.00
UPS	18	800.00	14,400.00
Plywood for backboards			350.00
Miscellaneous fasteners and hardware			350.00
Dividing one room into 2 areas (wiring closet space vs. separate storage space)			1,800.00
Contracted services for helping to consolidate some closet areas			15,000.00
Cisco upgrades to support two 10g lines	1	28,000.00	28,000.00
Total			200,000.00

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Delaware Technical and Community College - DTCC (\$200,000)

DTCC will improve their internal campus network infrastructure for ~~Stanton and Owens~~ campuses to ensure that data from the targeted areas (science and engineering) are switched through new reliable intelligent managed switches within a stable operating environment. This improvement will reduce the amount of collisions and congestion on the data path that the targeted areas (science and engineering) share with all other services and departments. In order to improve the switched network, some network cabling will need to be replaced and/or expanded to better serve targeted areas. Environmental and power improvements in the campus network infrastructure and server rooms will also be required to improve the reliability and move toward a more stable operating environment for targeted area's network traffic.

Funds are requested in Year 1 to improve internal campus network:

- 15 equipment cabinets and room installation upgrades - \$31,800
- 18 com closet room and cabinet exhaust fans - \$8,400
- 18 environmental monitoring - \$7,200
- 15 electrical circuit and illumination upgrades, fasteners and hardware - \$5,200
- 18 security cam equipment - \$16,200
- 10 optical fiber junction boxes, 24 optical fiber interface modules and jumpers - \$10,400
- various wire management components and surge protectors - \$11,200
- 48 data switch upgrades - \$67,200
- 18 UPS - \$14,400
- Cisco upgrade to support two 10g lines - \$28,000

